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### 3. REQUIREMENTS AND BASES

#### 3.1 Functional and Performance Requirements

##### 3.1.1 SSSTF System Level Requirements

Rqmt ID: 001

Rqmt Classification: environmental

Rqmt Text: The SSSTF shall accept onsite INEEL CERCLA remediation waste as defined in the CERCLA Waste Inventory Database for either storage, treatment, and/or disposal.

Rqmt Basis: Provide for removal and onsite disposal of wastes which have the potential to expose workers and public to radionuclide contamination.

Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3  
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 1.3.3  
(3) Table 1.6, Assumption T.

Rqmt ID: 002

Rqmt Classification: environmental

Rqmt Text: Wastes transferred from the SSSTF to the ICDF for disposal shall meet Agency approved ICDF waste acceptance criteria, and applicable RCRA land disposal restrictions.

Rqmt Basis: Provide for removal and on-site disposal of wastes which have the potential to expose workers and public to radionuclide contamination.

Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3  
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 1.3.3  
(3) Table 1.6, Assumptions G and N.

Rqmt ID: 005

Rqmt Classification: mission critical

Rqmt Text: The SSSTF shall have a design life of 30 years.

Rqmt Basis: Based on typical DOE practices. Design life for key equipment will be specified during 30% and/or 90% design activities.

Rqmt Reference: Table 1.6, Assumption V.

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Rqmt ID: 029

Rqmt Classification: mission critical

Rqmt Text: The SSSTF shall be designed to store and handle noncontact waste.

Rqmt Basis: To meet the ER mission and dispose of the waste defined in the ROD.

Rqmt Reference: Table 1.6, Assumptions D and T.

### **3.1.2 SSSTF Major Function Requirements**

#### **3.1.2.1 Administrative Function**

Rqmt ID: 006

Rqmt Classification: mission critical

Rqmt Text: The Administrative Function shall have the capability to receive and process up to TBD01 trucks of incoming waste within a work shift.

Rqmt Basis: This requirement defines the administrative throughput capability of processing incoming waste trucks through the facility based on expected inventory quantities and operation schedule. TBD01 will be defined as a result of work performed in an EDF. See Table 1.3-1.

Rqmt Reference: Table 1.6, Assumption T.

Rqmt ID: 016

Rqmt Classification: mission critical

Rqmt Text: The Administrative Function shall provide office and crew quarter space in which TBD02 personnel can perform their daily tasks in a regulatory compliant environment.

Rqmt Basis: The total space is based on the estimated number of personnel that will be required to operate the treatment and storage process as well as administer and support these operations. TBD02 will be defined as a result of work performed in an EDF. See Table 1.3-1.

Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3  
(2) Facility requirement imposed via RD/RA Scope of Work for WAG 3 OU 3-13, Section 4.3.3.4.  
(3) Table 1.6, Assumption T.

Rqmt ID: 007

Rqmt Classification: other

Rqmt Text: The Administrative Function shall have the capability to determine the weight of the waste vehicle being processed to within +/- 100 lb accuracy.

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**Rqmt Basis:** To comply with landfill standards for cell location and cell content. Trucks are paid on a per 100 lb basis.

**Rqmt Reference:** 40CFR264.309 (a) and (b),  
40CFR264.73

**Rqmt ID:** 009

**Rqmt Classification:** other

**Rqmt Text:**The Administrative Function shall provide the capability to maintain waste processing and disposal records in accordance with 40CFR264.309(a) and (b).

**Rqmt Basis:** To comply with landfill standards for cell location and cell content.

**Rqmt Reference:** Table 12-3 of OU 3-13 ROD

**Rqmt ID:** 034

**Rqmt Classification:** other

**Rqmt Text:**The Administrative Function shall provide the capability to perform load inspection and QA verification of the load profile.

**Rqmt Basis:** To comply quality assurance guidelines and regulations.

**Rqmt Reference:** Table 1.6, Assumption J, K, L, and M.

### **3.1.2.2 Staging and Storage Function**

#### **3.1.2.2.1 Off-Load/Load Function**

**Rqmt ID:** 035

**Rqmt Classification:** mission critical

**Rqmt Text:**The Off-Load/Load Function shall provide the capability to off-load and/or load non-aqueous waste from bulk transfer vehicles, roll-on roll off containers, or other containers and place in staging or storage.

**Rqmt Basis:** The facility needs the flexibility to support various types of material transport methods.

**Rqmt Reference:** Table 1.6, Assumption E.

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Rqmt ID: 036 Rqmt Classification: mission critical

Rqmt Text: The Off-Load/Load Function shall provide the capability to off-load and/or load liquid waste from bulk tanker vehicles or other containers and transfer to storage.

Rqmt Basis: The facility needs the flexibility to support various types of material transport methods.

Rqmt Reference: Table 1.6, Assumption W.

Rqmt ID: 037 Rqmt Classification: mission critical

Rqmt Text: The Off-Load/Load Function shall provide the capability to off-load bulk or prepackaged operational supplies and place in storage.

Rqmt Basis: The facility needs the flexibility to support various types of transport methods.

Rqmt Reference: Project Derived Requirement

#### **3.1.2.2.2 External Staging/Storage Function**

Rqmt ID: 004 Rqmt Classification: mission critical

Rqmt Text: The External Staging/Storage Function shall provide for TBD03 gallons of interim storage for monitoring well purge water and other liquid waste in accordance with 40 CFR 264.553 and 40 CFR 264.554.

Rqmt Basis: To manage and treat monitoring well construction and sampling wastes as well as other liquid waste generated prior to construction of the ICDF. TBD03 will be defined as a result of work performed in an EDF. See Table 1.3-1.

Rqmt Reference: (1) OU 3-13 ROD, page 11-19  
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 1.3.3  
(3) Table 1.6, Assumptions O and P.

Rqmt ID: 038 Rqmt Classification: mission critical

Rqmt Text: The External Staging/Storage Function shall provide for TBD04 gallons of liquid waste storage.

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**Rqmt Basis:** To support liquid waste storage and typical Radiological Facility operations. TBD04 will be defined as a result of work performed in an EDF. See Table 1.3-1.

**Rqmt Reference:** Table 1.6, Assumption X.

**Rqmt ID:** 010

**Rqmt Classification:** mission critical

**Rqmt Text:**The External Staging/Storage Function shall provide TBD05 square feet of external staging areas for non-aqueous waste awaiting either treatment or disposal.

**Rqmt Basis:** The SSSTF will serve as the receiving area for CERCLA wastes prior to treatment and/or disposal in the ICDF. A sixty day storage of waste awaiting treatment will be needed to support operations. TBD05 will be defined as a result of work performed in an EDF. See Table 1.3-1.

**Rqmt Reference:** (1) OU 3-13 ROD, Section 11.1.3  
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 4.3.3.5  
(3) Table 1.6, Assumption T.

**Rqmt ID:** 039

**Rqmt Classification:** mission critical

**Rqmt Text:**The External Staging/Storage Function shall provide for TBD06 square feet of external storage area(s) for empty waste containers.

**Rqmt Basis:** To support typical Radiological Facility decontamination operations. TBD06 will be defined as a result of work performed in an EDF. See Table 1.3-1.

**Rqmt Reference:** Table 1.6, Assumption T.

### 3.1.2.2.3 Internal Staging/Storage Function

**Rqmt ID:** 012

**Rqmt Classification:** mission critical

**Rqmt Text:**The Internal Staging/Storage Function shall provide TBD07 cubic feet of covered RCRA/TSCA/435.1 compliant (but not permitted) waste and reagent storage to be utilized until treatment and/or disposal of waste can be achieved.

**Rqmt Basis:** The SSSTF will serve as the receiving area for wastes received from WAG 3 and other WAGs prior to disposal of the waste in the ICDF. A 60 day storage of

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waste awaiting treatment will be needed to support operations. TBD07 will be defined as a result of work performed in an EDF. See Table 1.3-1.

Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3  
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 4.3.3.5  
(3) Table 1.6, Assumption T.

Rqmt ID: 040

Rqmt Classification: mission critical

Rqmt Text: The Internal Staging/Storage Function shall provide TBD08 square feet of storage capacity for those waste that do not meet the ICDF WAC or treatment capabilities of the SSSTF.

Rqmt Basis: To support storage of expected material requiring more stringent exposure control procedures. TBD08 will be defined as a result of work performed in an EDF. See Table 1.3-1.

Rqmt Reference: Table 1.6, Assumption T.

### 3.1.2.3 Waste Treatment Function

Rqmt ID: 013

Rqmt Classification: mission critical

Rqmt Text: The Waste Treatment Function shall size reduce material to meet ICDF waste acceptance criteria.

Rqmt Basis: The SSSTF must prepare waste for disposal in accordance with WAC constraints.

Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3  
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 4.3.3  
(3) Table 1.6, Assumption N.

Rqmt ID: 014

Rqmt Classification: mission critical

Rqmt Text: The Waste Treatment Function shall treat monitoring well wastes, leachate, and other secondary liquid waste to meet ICDF Evaporation Pond WAC.

Rqmt Basis: To manage and treat liquid waste.

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Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3  
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 1.3.3  
(3) Table 1.6, Assumption G

Rqmt ID: 015

Rqmt Classification: mission critical

Rqmt Text: The Waste Treatment Function design shall be capable of treating at least TBD10 cubic yards of CERCLA remediation waste per work shift.

Rqmt Basis: An analysis will be performed to establish/verify throughput requirements for the treatment process(s). TBD10 will be defined as a result of work performed in an EDF. See Table 1.3-1.

Rqmt Reference: Table 1.6, Assumption T.

Rqmt ID: 041

Rqmt Classification: mission critical

Rqmt Text: The Waste Treatment Function shall provide the capability to perform reagent make-up to support treatment operations.

Rqmt Basis: An analysis will be performed to establish/verify treatment processes and the reagent make-up needed to support those processes.

Rqmt Reference: Block Flow Diagram

Rqmt ID: 043

Rqmt Classification: mission critical

Rqmt Text: The Waste Treatment Function shall provide for TBD11 square feet of storage areas for secondary waste.

Rqmt Basis: To support typical Radiological Facility operations. TBD11 will be defined as a result of work performed in an EDF. See Table 1.3-1.

Rqmt Reference: Table 1.6, Assumptions G and T.

Rqmt ID: 044

Rqmt Classification: mission critical

Rqmt Text: The Waste Treatment Function shall provide the capability to package waste not meeting ICDF WAC for off-site disposal in accordance with the off-site rule.

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Rqmt Basis: To support typical Radiological Facility operations.

Rqmt Reference: (1) Table 1.6, Assumptions G and F.

#### **3.1.2.4 Decontamination Function**

Rqmt ID: 045

Rqmt Classification: mission critical

Rqmt Text: The Decontamination Function shall provide shall provide the capability to perform decontamination of transfer vehicles, containers, and operations equipment and may occur at multiple locations.

Rqmt Basis: To support typical Radiological Facility operations.

Rqmt Reference: Block Flow Diagram

Rqmt ID: 046

Rqmt Classification: mission critical

Rqmt Text: The Decontamination Function shall provide the capability to segregate and collect non-aqueous waste generated in the decontamination process.

Rqmt Basis: To support typical Radiological Facility operations.

Rqmt Reference: Block Flow Diagram

Rqmt ID: 047

Rqmt Classification: mission critical

Rqmt Text: The Decontamination Function shall provide shall provide the capability to segregate and collect liquid waste generated in the decontamination process.

Rqmt Basis: To support typical Radiological Facility operations.

Rqmt Reference: Block Flow Diagram



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### **3.1.3 Boundaries and Interfaces**

Rqmt ID: 017

Rqmt Classification: environmental

Rqmt Text: All SSSTF activities shall take place within the WAG 3 area of contamination per Figure 1-10 of OU 3-13 ROD.

Rqmt Basis: To allow flexibility in managing the consolidation and remediation of wastes without triggering LDR and other RCRA requirements.

Rqmt Reference: OU 3-13 ROD page 1-12.

### **3.1.4 Codes, Standards, and Regulations**

Rqmt ID: 025

Rqmt Classification: safety significant

Rqmt Text: The SSSTF shall be constructed and operated in accordance with the substantive requirements of applicable regulations as defined in Table 3.1.4-1, SSSTF Regulatory References.

Rqmt Basis: The ROD requires facility construction and operation to be in accordance with applicable codes and regulations.

Rqmt Reference: OU 3-13 ROD, Table 12-3.

Rqmt ID: 026

Rqmt Classification: other

Rqmt Text: The SSSTF facility shall be designed in accordance with the substantive requirements of other design standards as defined in Table 3.1.4-2, Other Design Standards.

Rqmt Basis: Required by contract with the DOE.

Rqmt Reference: BBWI Management and Operations Contract for the INEEL

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### 3.1.5 Operability

Rqmt ID: 027

Rqmt Classification: mission critical

Rqmt Text: The SSSTF shall be designed to routinely perform waste treatment in yearly campaigns that run from March to November, however the facility will remain in operation the remainder of the year.

Rqmt Basis: To reduce the complexity associated with operating through winter months.

Rqmt Reference: Table 1.6, Assumption F.

Rqmt ID: 028

Rqmt Classification: mission critical

Rqmt Text: The SSSTF shall be designed to allow operating on a 10-hour shift, four days per week.

Rqmt Basis: To reduce operational complexity by maintaining compatibility with other site operations.

Rqmt Reference: Table 1.6, Assumption I.

Rqmt ID: 048

Rqmt Classification: mission critical

Rqmt Text: The SSSTF shall be designed for year round acceptance of waste for storage or off-site disposal.

Rqmt Basis: To support expected operational needs.

Rqmt Reference: Table 1.6, Assumption F.

Rqmt ID: 049

Rqmt Classification: mission critical

Rqmt Text: The SSSTF shall be designed for year round waste monitoring and management operations.

Rqmt Basis: To support expected operational needs.

Rqmt Reference: Table 1.6, Assumption F.

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### **3.2 Special Requirements**

#### **3.2.1 Radiation and Other Hazards**

Radiation and Other Hazard requirements are defined in regulations imposed in Table 3.1.4-1.

#### **3.2.2 ALARA**

Rqmt ID: 052

Rqmt Classification: safety

Rqmt Text: To comply with the ALARA program, the SSSTF design shall TBD12.

Rqmt Basis: To support typical Radiological Facility operations. TBD12 will be defined as a result of work performed in an EDF. See Table 1.3-1.

Rqmt Reference: (1) DOE Order 5400.5  
(2) Table 1.6, Assumption T.

#### **3.2.3 Nuclear Criticality Safety**

Not Applicable based on the SSSTF classification of "Nonnuclear, Radiological".

#### **3.2.4 Industrial Hazards**

Industrial Hazard requirements are defined in regulations imposed in Table 3.1.4-1.

#### **3.2.5 Operating Environment and Natural Phenomena**

Rqmt ID: 030

Rqmt Classification: safety significant

Rqmt Text: With respect to natural phenomena hazards (seismic, wind, and flood), the SSSTF shall be categorized as Performance Category TDB13 as defined by DOE-STD-1020 and 1021.

Rqmt Basis: Required constraint for a facility where NPH caused failure could result in loss of function for hazardous material recovery, as well as possible release of radioactive and toxic materials. TBD13 will be defined as a result of work performed in an EDF. See Table 1.3-1.

Rqmt Reference: DOE-STD-1020 and 1021.

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Rqmt ID: 033

Rqmt Classification: environmental

Rqmt Text: The SSSTF shall be constructed outside of the area designated in the ROD as the 100 year floodplain.

Rqmt Basis: The ROD stipulates that the ICDF landfill will be located outside of the 100 year floodplain. Optimal location of the SSSTF is adjacent to the landfill, thus this requirement applies to the SSSTF as well.

Rqmt Reference: OU 3-13 ROD, page 11-18, Figure 5-1, pg 5-2.

### **3.2.6 Human Interface Requirements**

No human interface requirements have been identified.

### **3.2.7 Specific Commitments**

No specific commitment requirements have been identified.

## **3.3 Engineering Design Requirements**

### **3.3.1 Civil and Structural**

Rqmt ID: 018

Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with fire water for both automatic sprinklers and fire hydrants.

Rqmt Basis: To support typical operations

Rqmt Reference: Table 1.6, Assumption R.

Rqmt ID: 019

Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with telephone capabilities.

Rqmt Basis: To support typical operations

Rqmt Reference: Table 1.6, Assumption R.

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Rqmt ID: 020

Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with fire alarm capabilities.

Rqmt Basis: To support typical operations

Rqmt Reference: Table 1.6, Assumption R.

Rqmt ID: 021

Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with electrical power capabilities.

Rqmt Basis: To support typical operations

Rqmt Reference: Table 1.6, Assumption R.

Rqmt ID: 022

Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with standby power capabilities.

Rqmt Basis: To support typical operations

Rqmt Reference: Table 1.6, Assumption R.

Rqmt ID: 023

Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with potable water, raw water, and sewer connections.

Rqmt Basis: To support typical operations

Rqmt Reference: Table 1.6, Assumption R.

Rqmt ID: 024

Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with computer network and data communication functions.

Rqmt Basis: To support typical operations

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Rqmt Reference: Table 1.6, Assumption R.

### **3.3.2 Mechanical and Materials**

No additional Mechanical and Materials requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

### **3.3.3 Chemical and Process**

Rqmt ID: 031

Rqmt Classification: other

Rqmt Text: The automated sizing equipment for the Waste Treatment Function shall be designed to accept wooden containers and other debris up to 4 x 4 x 8 ft in size.

Rqmt Basis: To simplify operational concept for anticipated waste treatment. Automated does not necessarily imply robotics and may involve mechanical feeding. This does not pertain to material handling for entry to the sizing equipment.

Rqmt Reference: OU 3-13 ROD, Table 4-1.

### **3.3.4 Electrical Power**

No additional Electrical Power requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

### **3.3.5 Instrumentation and Control**

No additional Instrumentation and Control requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

### **3.3.6 Computer Hardware and Software**

No Computer Hardware and Software requirements have been identified.

### **3.3.7 Fire Protection**

No additional Fire Protection requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

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### **3.4 Testing and Maintenance Requirements**

#### **3.4.1 Testability**

No testability requirements have been identified.

#### **3.4.2 TSR-Related Surveillances**

No TSR-related surveillance requirements have been identified.

#### **3.4.3 Non-TSR Inspections and Testing**

No non-TSR inspection and testing requirements have been identified.

#### **3.4.4 Maintenance**

No maintenance requirements have been identified.

#### **3.4.5 Other Requirements**

#### **3.4.6 Security and SNM Protection**

Security requirements are defined in regulations imposed in Table 3.1.4-1.

#### **3.4.7 Special Installation Requirements**

No Special Installation Requirements have been identified.

#### **3.4.8 Reliability, Availability, and Preferred Failure Modes**

No Reliability, Availability, and Preferred Failure Mode Requirements have been identified.

#### **3.4.9 Quality Assurance**

No additional Quality Assurance requirements to those imposed by the DOE-ID Architectural Engineering Standards and applicable regulations have been identified. See Table 3.1.4-1 for imposed Quality Assurance regulations.

#### **3.4.10 Miscellaneous**

No Miscellaneous requirements have been identified.